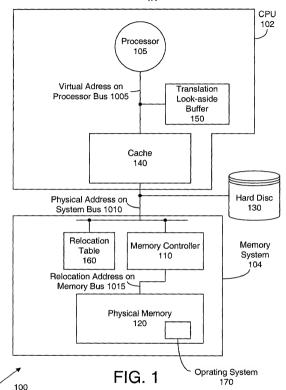Title: Relocation Table For Use In Memory Management
Inventor(s): Kenneth Mark Wilson, et al.
HP PDNO: 10012379-1
Contact: Tuan V. Ngo   Ph: 408.447.8133

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CPU
102

Processor
105

Virtual Adress on
Processor Bus 1005

Translation
Look-aside
Buffer
150

Cache
140

Physical Address on
System Bus 1010

Hard Disc
130

Relocation
Table
160

Memory Controller
110

Memory
System
104

Relocation Address on
Memory Bus 1015

Physical Memory
120

Oprating System
170

FIG. 1

100

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FIG. 2A

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Inventor(s): Kenneth Mark Wilson, et al.
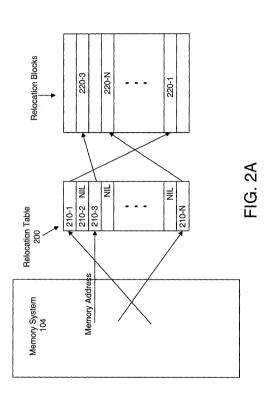HP PDNO: 10012379-1
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Relocation Blocks

| 220-1 | 220-2 | 220-3 | 220-4 | · · · | 220-N |

Implied Implied Implied Implied   Implied Implied

Relocation Table
250

| 210-1 | 210-2 NIL | 210-3 | 210-4 NIL | · · · | 210-N |

Memory System
104

Memory Address

FIG. 2B

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Virtual Address on
Processor Bus 1005
304

	16K Offset

47   13   0

Physical Address on
System Bus 1010
308

	16K Offset

31   13   0

Relocation Address on
Memory Bus 1015
312

	4K Offset

29   11   0

316

Address 1
Address 2
⋮
Address N

FIG. 3

Title: Relocation Table For Use In Memory Management
Inventor(s): Kenneth Mark Wilson, et al.
HP PDNO: 10012379-1
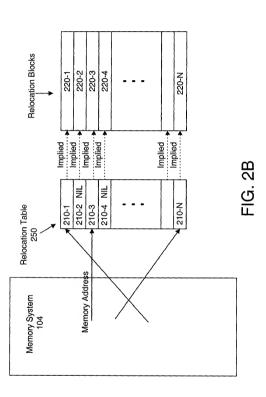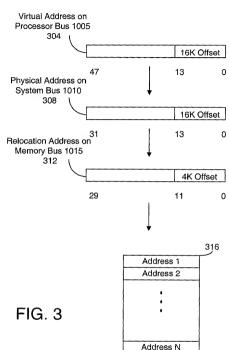Contact: Tuan V. Ngo   Ph: 408.447.8133

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```
┌────────────────────────────┐
│ Memory access for some data │
│            404              │
└────────────────────────────┘
              │
              ▼
         ◇ In table look-          ┌──────────────────┐
          aside buffer?  ──N──▶    │  Find the page   │
              408                  │       412        │
              │                    └──────────────────┘
              Y                             │
              │                             ▼
              │                    ┌──────────────────┐
              │                    │ Update the table │
              │                    │ look-aside buffer│
              │                    │       416        │
              │◀───────────────────└──────────────────┘
              ▼
         ◇ In cache?  ──N──▶  ┌──────────────────┐
              418             │  Access memory   │
              │               │       420        │
              Y               └──────────────────┘
              │◀───────────────────────┘
              ▼
┌────────────────────────────┐
│        Return data         │
│            424             │       FIG. 4
└────────────────────────────┘
```

Title: Relocation Table For Use In Memory Management
Inventor(s): Kenneth Mark Wilson, et al.
HP PDNO: 10012379-1
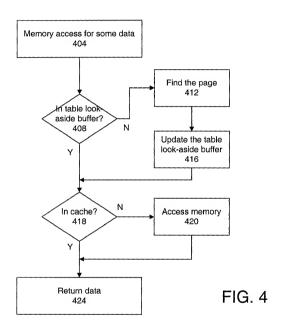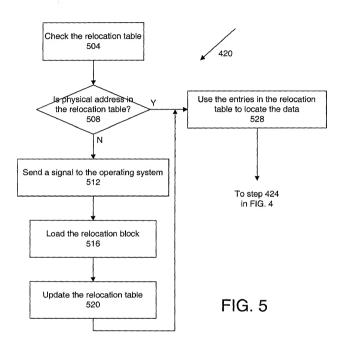Contact: Tuan V. Ngo   Ph: 408.447.8133

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```
┌─────────────────────────┐
│  Check the relocation table │
│           504           │
└─────────────────────────┘
             │                        ╱ 420
             ▼
      ╱─────────────╲
    ╱  Is physical address in ╲   Y    ┌─────────────────────────────┐
   ╲  the relocation table?   ╱─────▶  │ Use the entries in the relocation │
    ╲        508        ╱              │ table to locate the data         │
      ╲─────────────╱                  │            528                  │
             │ N                        └─────────────────────────────┘
             ▼                                       │
┌─────────────────────────────┐                      ▼
│ Send a signal to the operating system │        To step 424
│            512               │            in FIG. 4
└─────────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│  Load the relocation block  │
│           516           │
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐
│  Update the relocation table │           FIG. 5
│           520           │
└─────────────────────────┘
```

FIG. 5

Title: Relocation Table For Use In Memory Management
Inventor(s): Kenneth Mark Wilson, et al.
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FIG. 6